

REMARKS

The claims appearing in this patent application following this Amendment are Claims 1, 3, 19 and 21-28. Claims 19 and 21-24 are indicated to be allowed. No claims have been cancelled. Claims 25-28 are recited for the first time. Claims 1 and 3 stand rejected.

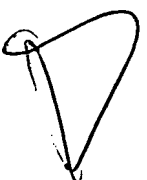
Claims 1 and 3 are rejected under 35 U.S.C. 103 as being unpatentable over the applicants' earlier patent to Pieroni et al (5,922,944) in view of the patent to Chu et al (5,849,596). This rejection is respectfully traversed. In determining the issue of obviousness, the precise details surrounding the purpose for which the applicants employ non-combustible nitrogen gas in a smoke generating apparatus must first be understood and appreciated. In this regard, and as recited in independent Claim 1, there is claimed a smoke generating apparatus including:

a gas inlet communicating with said closed smoke producing chamber to receive non-combustible nitrogen gas under pressure, said gas inlet having an inlet orifice in fluid communication with said supply of fluid so that when said non-combustible nitrogen gas under pressure is delivered through said gas inlet, some of said supply of flammable fluid is drawn into said gas inlet via said inlet orifice, whereby a mixture of said non-combustible nitrogen gas and flammable fluid is blown through said gas inlet and against

said heating element to be vaporized into smoke when said heating element is heated (emphasis added).


Contrary to the teachings of Chu et al, which describes nitrogen gas used to blow smoke away from a smoke generating chamber after the smoke has first been generated, independent Claim 1 recites that non-combustible nitrogen gas is used to blow flammable fluid into contact with a heating element to be vaporized into smoke within the chamber. Thus, the nitrogen gas used by Chu et al has nothing whatsoever to do with the process of generating smoke. The distinction of using non-combustible gas in the method for creating smoke (in the matter recited in independent Claim 1) as opposed to using nitrogen gas only to blow smoke out of a smoke generating apparatus after the smoke has already been generated (as taught by Chu et al) is significant with regard to the obviousness of the applicants' invention as recited in Claim 1 in view of the cited patent to Chu et al.

As will be known to those skilled in the art, nitrogen gas is inert (i.e. it contains no oxygen) and, therefore, is non-combustible. Accordingly, one wishing to make smoke would be expected to use a combustible gas containing air that is adapted to ignite rather than a mixture containing inert, non-combustible nitrogen gas like that claimed by the applicants. In this same regard, one wishing to create smoke through an ignition process would be unlikely to use carbon dioxide (as is also taught by the applicants) since compressed carbon dioxide is regularly used (e.g. in fire extinguishers) to suppress combustion.



Thus, despite the teachings of Chu et al which describe the use of nitrogen gas for the sole purpose of blowing smoke from one container to another without “deteriorating” the smoke, there is absolutely no teaching or suggestion or recognition in Pieroni et al, Chu et al, or any combination thereof for the improbable use of a non-combustible gas (i.e. a gas that does not burn) of any kind for the additional purpose of blowing a flammable fluid (e.g. oil) against a heating element and creating an inert environment within which the fluid is vaporized into smoke in the manner that has been recited by the applicants in independent Claim 1. While Chu et al’s choice of inert nitrogen gas is simply to prevent the residual smoke from deteriorating, the applicants’ use of nitrogen gas is directed to an entirely different purpose. The fact that Chu et al creates an atmosphere of either nitrogen or air indicates that no thought was given to the risks of an explosion or the creation of an inert environment in which the smoke is generated (see Chu et al at column 3, lines 23 to 26).

What is even more, the process taught by Chu et al is intended simply to determine the smoke content of edible oil by heating the oil to a temperature necessary to generate smoke and then blowing the smoke into a collector for subsequent testing. It would be unfair and inaccurate to conclude that one of reasonable skill would think or be motivated to consider the teaching of Chu et al (which is applicable primarily to the testing of and research related to edible oils) in the same volatile, potentially explosive environment containing flammable smoke producing fluid as well as automotive gasoline vapors in which the applicants’ smoke generating apparatus will be used. That is to say, it is highly unlikely that the non-analogous teachings of Chu et al for heating an edible oil in the relatively safe foods testing



industry would be applied to a potentially explosive environment, such as, for example, that encountered when testing the fuel vapor recovery system of a motor vehicle, where an increase in temperature and/or pressure in the presence of a spark could ignite the smoke generating fluid or the hydrocarbon vapors that might enter the smoke producing chamber and thereby cause a dangerous explosion.

More particularly, Chu et al did not face the same problems within the same environment as those faced by the applicants. Moreover, and as pointed out above, Chu et al does not use nitrogen gas or any other non-combustible gas in the same manner or for the same purpose as the manner and purpose recited by the applicants in independent Claim 1. To this end, and as described in detail by the applicants at page 13, line 17 to page 14, line 4 of the applicants' patent specification:

As an alternative to pressurized air, carbon dioxide or nitrogen gas from a pressure and flow related tank or bottle can be used because of their non-flammable and inert characteristics. That is to say, smoke carried by nitrogen gas would be relatively safe for testing the evaporative system of a motor vehicle which lies in a generally volatile environment of potentially explosive hydrocarbon vapors. Accordingly, the ability to produce smoke with nitrogen gas would provide a safe and efficient means for locating a leak in the evaporative system of a motor vehicle. Moreover, producing smoke with nitrogen gas rather than air would enable a variety of high pressure systems (e.g. an air pressure system) to be tested at



high operating temperatures but without the inherent risks of an explosion (emphasis added).

In summary, it is submitted that the problems to be solved by the applicants, the environment in which the applicants' smoke generating apparatus is to be employed and the manner and purpose for which the applicants use nitrogen gas are all distinctly different from and unrelated to the problems, environment and application of nitrogen gas associated with the smoke generating technique described in the patent to Chu et al. Accordingly, there is simply nothing of record herein, after applying the factual inquiries set forth in the seminal case of Graham v. John Deere Co. to conclude that one of reasonable skill in the art to which the applicants' invention relates would ever think to combine the teachings of Pieroni et al and Chu et al in the manner proposed by the Examiner in the Office Action without the use of impermissible hindsight. Therefore, the smoke generating apparatus recited by the applicants in independent Claim 1 and Claim 3, which depends therefrom, is believed to be patentable over any reasonable combination of Pieroni et al and Chu et al.

Claims 25-28 are recited for the first time. Inasmuch as Claims 19 and 21-24 are already indicated to be allowed and/or for reasons similar to those presented above, each of newly presented Claims 25-28 recites a method which is believed to be patentable over all of the art that is of record herein.

In view of all of the foregoing, each of Claims 1, 3, 19 and 21-28 which now appears in this patent application following amendment is believed to be patentable. Therefore,

reconsideration of the Examiner's rejection is requested and a Notice of Allowance is earnestly solicited.

Respectfully submitted,



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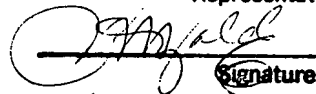
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SANDRA LUIZA MERIZADE

Name of applicant, assignee or Registered
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Signature

August 16, 2002
Date

